

Start Up Sequences
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5/12/2006

I've listed below a start up sequence that covers being the Recycler back to pre shut down levels. I've also indicated the approximate time that will take to complete each tasks, the beam structure needed along with misc software and instrumentation. This is a working document and changes will be made as corrections are needs.

Start up sequence

1. Set MI counter wave (time 2-4 hrs)
 - a. Beam structure
 - i. 53 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. RWM
2. Time in Kicker (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
3. Set MI kicker amp (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
4. Set RR counter waves (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes

5. Set RR Kicker Amp (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
 - c. Software
 - i. Orbit smooth
 - ii. Closure
6. Close in injection to circulating orbit (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. Waterfall display
7. Smooth closed orbit (pre shut down levels) (time 1-2 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - d. Software
 - i. Orbit smooth
 - ii. Closure
8. Re-close Injection to circulating orbit (time .5-1 hrs)
 - a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - d. Closure Software
 - i. Orbit smooth

- ii. Closure
9. Set tune (pre shut down levels) (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. Spectrum Analyzer
 - c. Software
 - i. Tune display
 - d. Software
 - i. Orbit smooth
 - ii. Phase trombone
10. Closure (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. Spectrum Analyzer
 - c. Software
 - i. Tune display
 - d. Software
 - i. Orbit smooth
11. Smooth to golden orbit (time 2-3 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. Spectrum Analyzer
 - c. Software
 - i. Tune display
 - d. Software
 - i. Orbit smooth
12. Re-close Injection to circulating orbit (time 2-3 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. Spectrum Analyzer
 - c. Software
 - i. Tune display
 - d. Software
 - i. Orbit smooth
 - ii. closure
13. Set RR extraction counter wave (time 1-2 hrs)
- a. Beam structure

- i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - d. Closure Software
 - i. Orbit smooth
 - ii. Closure
14. Time in Extraction Kicker (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
 - c. Software
15. Closure (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
 - c. Software
 - i. Orbit smooth
 - ii. Closure
16. Set RR kicker Amp (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Kicker Scopes
 - c. Software
 - i. Orbit smooth
 - ii. Closure
17. Set MI counter wave (time .5-1 hrs)
- a. Beam structure
 - i. 53 Mhz
 - b. Instrumentation

- i. BPM's
 - ii. Torroids
 - c. Kicker Scopes
18. Set MI kicker amp (time .5-1 hrs)
- a. Beam structure
 - i. 53 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
19. Kicker Scopes (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. Scope traces
20. Close R22 line to MI (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. Waterfall display
 - d.
21. Time in Abort line kicker (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. Multi wires
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. multwire

22. Tune up Abort Line (time .5-1 hrs)

- a. Beam structure
 - i. 2.5 Mhz
- b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. multitwire
- c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. multitwire

23. Complete Acceptance measurement (time .5-1 hrs)

- a. Beam structure
 - i. 2.5 Mhz
- b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - iii. scrapers
- c. Software
 - i. Orbit smooth

24. Three/Four bump around the Mi30 cooling insert (time 2-4 hrs)

- a. Beam structure
 - i. 2.5 Mhz
- b. Instrumentation
 - i. BPM's
 - ii. Torroids
- c. Software
 - i. Orbit smooth

25. Three bump Lambertson/cooling tanks/flying wire/ scrapers location (time 2-4 hrs)

- a. Beam structure
 - i. 2.5 Mhz
- b. Instrumentation
 - i. BPM's
 - ii. Torroids
- c. Software
 - i. Orbit smooth
 - ii. Closure

26. App scan the machine (time 4-6 hrs)

- a. Beam structure

- i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
27. Complete Acceptance measurement (time .5-1 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. scrapers
28. Set tune / Set Chrom (pre shut down levels) (time 1-2 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. Tune display
 - iv. Phase trombone
29. Complete pencil beam lifetime measurements (time 1-2 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. scrapers
30. Complete 120 Gev/150 Ramp compensation (time 1-2 hrs)
- a. Beam structure
 - i. 2.5 Mhz

- b. Instrumentation
 - i. BPM's
 - ii. Torroids
 - c. Software
 - i. Orbit smooth
 - ii. Closure
 - iii. Bpm display
31. Retune in QCL (time 4-8 hrs)
- a. Beam structure
 - i. 2.5 Mhz
 - b. Instrumentation
 - i. BPM's
 - c. Software
 - i. Bump scanning software
 - ii. Lifetime display
 - iii. Paul program